CE

Gold Scan

User's Manual

KTS-3D Online

KTS-Electronic
Germany

Table of contents

1. General guidelines 4
1.1 Introduction 4
1.2 Scope of delivery 4
1.3 Assembly 5

2. Electronic unit 6
2.1 The front 6
2.2 The back 7

3. Progress of search 8
3.1 Basics (important) 8
3.2 Usage of coils 8
3.2.1 25 cm search coil 8
3.2.2 The 1 x 1 m coil (search frame) 9
3.2.3 General advices for usage 9
3.3 Precise localisation of metal objects 10
3.4 Search instructions 10
3.5 Important informations for the RESET-button 11
3.6 The search process 11
3.7 Error signals 12

4. General guidelines 13
4.1 Choice of search coils 13
4.1.1 25 cm coil 13
4.1.2 Cylindric coil 13
4.1.3 1 x 1 m PVC search frame 13
4.2 Accumulator and charger 14
4.3 Care 14
4.4 Depth gauge GOLD SCAN 14

5. Technical data 15
5.1 Electronic unit 15
5.2 1 x 1 m coil 15
5.3 System requirements 15

6. Computer and start of program 15
6.1 Software 15
6.1.1 Installing the software 15
6.1.2 Program start-up 15
6.2 Bluetooth pairing 16
6.3 Software information 17

7. Driver set-up (after reinstalling of Windows) 17
7.1 The search process 17
7.1.1 Start button 17
7.1.2 Storage of measurements 18
7.1.3 Transferring the measured data 18
7.2 System requirements 18

8. Program operations 18
8.1 Main window 18
8.2 Toolbar 19
8.2.1 File menu 19
8.2.2 Language 19
8.2.3 Info 19
8.3 Adjustment range 19
8.3.1 Serial interface 19
8.3.2 Speed 19
8.3.3 Position 19
8.3.4 Start / Stop 19
8.3.5 Audio output 20
8.3.6 Scaling 20
8.4 Presentation 20

9. License agreement 20
9.1 Utilisation clauses 20
9.2 Disclaimer of liability 21

10. Warranty 21
10.1 Out of warranty service 22
10.2 Legal note 22

11. Contact 22

1. General guidelines

1.1 Introduction

Dear customer,
we congratulate you on your purchase of GOLD SCAN. The GOLD SCAN is a high tech product from KTS-Electronic. After years of production and development of various metal detectors, we are in the position to present you the first metal detector, which directly is connectable to a computer. Therefore you are able to analyze details of your metal findings more precisely. The following informations are exceedingly important for gold and treasure seekers, archaeologists and industry because finally treasures thought lost can be recovered.

To avoid errors we recommend to read all instructions carefully.

We wish you a successful search with your new GOLD SCAN and please do not hesitate to contact us should additional questions arise.

Your KTS-Electronic Team

1.2 Scope of delivery

Hardware:

- GOLD SCAN electronic unit with Bluetooth® incl. installed lithium-ionic accumulator,
- Search coil 25 cm ⦸ (9.84” – waterproof) with 2 part carbon telescopic pole
- Cylindric coil 5 x 20 cm (1.96 x 7.87” – waterproof) with 10 m (32.8 ft.) cable
- 1 x 1 m (3.28 x 3.28 ft) search frame, 8-fold demountable (incl. backpack)
- Tablet PC with KTS software and operation system incl. lithium-ion accu
- Powerful quick-charger (2800 mAh) with power inverter, car-loading cable and additional 110V adapter
- Solid hard-top case

Software:

- KTS-3D software for GOLD SCAN (pre-installed on PC)
- USB stick with software for processing data on other computers

Service:

- User’s manual English, German, Spanish or French
- 2 years manufacturer's warranty for the entire scope of delivery (including hardware and software)

figure: without laptop

figure: incl. laptop (depending on version)

1.3 Assembly

Compared with other devices the assembly of your GOLD SCAN is very simple; through the Bluetooth connection - where only the coil cable must be linked - the unit is ready for immediate use.

Important description:
As already mentioned, the GOLD SCAN is a metal detector that is connected to the PC which is provided with the KTS-Online software. First you should use this device like a common metal detector, i.e. search and identify your findings on your display (kind of metal), then mark the place of discovery. Later you can scan the marked place of discovery more precisely by using your laptop with your KTS-Online software. The use of laptops and the respective settings will be explained in the last chapter.

First of all the detailed description of the device.

2. Electronic unit

2.1 The front

The electronic unit is attached in a stable, high-quality case. The front side shows 4 operating elements and the digital display.

MODE: The MODE knob can be turned to four various positions:

Off: The device is turned off.

Bat (battery control): The device is switched on, simultaneously the battery charge control is viewed on the display.The device is fully loaded if the value shows “180” and more.

MT (All metal search): All metals will be visualized without discrimination acoustically and optically through the value number (the metals will not be tested for their conductivity).
This position has the advantage, that you can detect with highest sensibility; through the value number one can evaluate the depth of the object. The lower the value number, the deeper the metal object is hidden. The shape of the object can be identified as well.

ID (metal discrimination): In this position the discriminator is operable. The metal class number of the found metal object will be calculated and shown on the display. With some exercise and practical knowledge you can determine the kind of metal through the displayed metal class value. Depending on the kind of metal the value can be between 0-180.

AUDIO: Volume control.

RESET: By pushing the RESET button an automatic zero balance is carried out. Before searching the RESET button must be pushed briefly. This also applies should an error signal occurs and in case the coil is switched.

FREQ.: After the device was activated, switched to the favored position with the MODE knob and the volume was adjusted the frequency should be regulated in such a way, that a slow ticking sound is hearable (blinking green LED). A subtile frequency adjustment stands for a stable sound.

LED: In the ID position the conductivity of a metal object will be identified.
As soon as the ID LED lights up and the display value is constant, the metal class can be read off. As long as the search coil stays in the area of the metal object the conductivity value and the ID LED will be shown.

Connection to the battery charger: For battery loading the plug must be connected to the connecting socket of the coil. Please control the loading process: The loading procedure is indicated by the orange light emitting diode, the green light shows the end of the loading procedure. After each loading procedure the connecting plug for the battery charger should be removed.

2.2 The back

1. Socket for coils: The connecting socket for coils is located on the left side. The connector plug of the search coil has to be plugged into the socket. Before removing the plug the locking knob must be pressed, only then an extraction is possible. The connector is compatible with all GOLD SCAN search coils.

2. Headphone socket: Any commercial headphones with 6.3 mm jack can be plugged in. During use the loudspeaker is turned off. Matching, light weight headphones are provided.

3. Progress of search

3.1 Basics (important)

There are two ways of searching:

- The searching of an area
  First of all search the area with the metal detector and mark all possible places of discovery.

- The scanning
  The software then scans the marked discoveries.

3.2 Usage of coils

3.2.1 25 cm search coil

The Assembling:
Screw the handle on the carbon telescope bar and wrap the cable of the search coil around the bar. Afterwards plug the jack into the proposed connector of the electronic unit. The electronic unit is kept in a carrying bag through which lower opening the plug is to be inserted.

The usage:
1. The search coil should be kept about 2 to 5 cm in parallel to the ground level.
2. After switch-on and regulation of the volume and frequency, you should press the RESET button for balancing the soil.
3. For the ground regulatory balance hold the coil around 5 cm above the ground (on a metal-free spot) and press the RESET button for about 3 seconds.
With the ground regulatory balance the influence of minerals in the soil will be neutralized and less error signals will occur.
4. Repeat the ground regulatory balance at several places to ensure that the regulatory is always carried out correctly. Especially by change of soil layers (e.g. caused by excavations) this process should be repeated.

3.2.2 The 1 x 1 m coil (search frame)

The assembly:
At first connect the PVC pipes (8-fold demountable) to each other, then fix the cable with a tape to the pipes.

The usage:
The search frame consists of lightweight plastic pipes and a 4 meter cable, which can be attached in or on the pipes. Most adequate for the search after large objects, which are suspected in a large-scale area.

With additional assistance you will gain a faster and more convenient result. A further advantage of this large coil is the fact that smaller disturbing metal parts do not appear. The search coil can be carried between 20-50 cm above the ground. The higher the distance to the ground, the lesser small and medium-sized metal parts are notified.

3.2.3 General advices for usage

We developed the GOLD SCAN in that way that the pivoting of the search coil is dispensable. Just hold the search probe flat and parallel to the ground and determine your own search speed.

After turning-on press the **RESET** button for a brief moment and regulate the **FREQ.** regulator until a slow ticking signal is hearable. This signal is similar to a seconds counter. With each new adjustment press the **RESET** button to determine the zero setting. With the knob **AUDIO** select the favored volume.

There are 2 search methods to choose from:

MT. **search method:**
Therefore turn the MODE control to the position **MT**. This search system shows all metals. With the **MT** search method you draw more power from your device, however, there is no metal discrimination possible.

ID search method:
For this purpose set the MODE control to the position **ID** – a metal discrimination is carried out. Once the **ID**-LED lights, a value will be shown on the display.

Aluminium approx.	20 – 40
Copper approx.	40 – 60
Iron approx.	60 – 80
Gold approx.	100 and higher.

3.3 Precise localisation of metal objects

GOLD SCAN works with the pulse induction searching system and is able to detect without setting the search coil in motion. With approaching the search coil to a metal object the frequency of the sound increases. As soon as the search coil is exactly positioned over the object, the highest tone is reached.
With this method not only the exact discovery of the object will be located, the shape of the item can also be identified through the sound continuity. For example, a long-lasting high tone stands in longitudinal direction for a slim object, e.g. a pipe. A high tone in any direction indicates a ringlike object.

3.4 Search instructions

During the search process ensure yourself that you do not carry items of metal with you. This could cause a wrong adjustment when pushing the **RESET** key and can produce false indicator effects whilst the search. In addition, this can produce a wrong discrimination or metal distinction.
During the search make sure, that the sound remains constant, otherwise a wrong adjustment by magnetic fields may occur. Especially when you search with the 1 x 1 m coil (search frame) be certain that – should an instable tone appear - the **RESET** key is pressed. This has to be considered in order to prevent unwanted interferences by geomagnetism.
Strongly magnetized soils affect large search coils (search frame) more than small search coils. Therefore be certain, when searching with the large coil, that it is kept approx. 15-50 cm (depending upon landscape) parallel to the soil and avoid abrupt movements.

3.5 Important informations for the RESET-button

The function of the RESET button is significant; the button should be pressed after each of the following changes.

1. After every activation of the metal detector
2. After every change of the mode function
3. After each change of search coils
4. During the search, if sound becomes instable due to bad ground conditions or geomagnetism.

3.6 The search process

To create the search more targeted and therefor more successful – especially before excavation – please draw your attention to the following:

1. Change of sound (frequency)
2. Intensity of sound
3. Continuity of sound
4. Extent of value (digital display)

The change of the sound is the first sign for the detection of a metal object. Before excavation, however, further particulars should be analyzed and the own search experience should be used for help.
The more intensive the sound, the nearer the position and larger the metal object. While the high search tone is audible, the search coil should be moved in the close environment to determine the shape of the metal object.

A continuous monitoring of the display value is unnecessary, because the itensity of the tone will identify the size and the metallic conductivity of the object. Subsequently you can start with the metal discrimination.

For the identification of the metal object the ID-position should be selected. After activation of the RESET key and the repeated FREQ. adjustment hold the search coil over the soil and observe the display. Your GOLD SCAN comes with a metal distinction. Thereby the inserted microprocessor computes the conductivity of the metal objects and indicates them on the digital display. The GOLD SCAN was developed in such a way that the necessity of swivelling the search coil is not given. During the depth detection this proves to be particularly helpful.

For the identification of a metal object a weak tone is insufficient. To compute the conductibility of a metal object a signal with high intensity is necessary. As long as the search coil is held over the metal object, the conductance number is stored and indicated.

We recommend to locate the findings with the sensitive search mode MT. at first, then – only if a clear acoustic signal is heard – switch to the ID mode.

In addition, hold the search coil in a constant height over the soil and press the **RESET** key for approx. 2 seconds. Then again move the search coil over the located metal object. As soon as the acoustic signal reaches its highest intensity, the metal will be shown on the display.

Compare the indicated conductance with the specified values on page 10 in order to determine the kind of metal you have found. The indicated values are appoximate values, which can be completed by your own search experience in your search area.

Please note that size and shape of the found objects will influence the measured data:

light metal (e.g. aluminum)	over	20
copper	over	40
iron	over	60
gold	over	100

NOTE:
To avoid wrong conductivity values it is absolutely necessary to RESET the soil balance by using the RESET button to renew the soil balance attitude after a mode change. When activating the RESET key you have to be sure, that no metal parts are contained in the soil.

3.7 Error signals

In line with the development of GOLD SCAN great emphasis was placed on stability and the avoidance of incidences. Despite the multiplicity of filters and modulators it is unfortunately possible that certain soil conditions cause disturbances, which can effect your measured values. Apart from a wrong soil balance attitude incorrect signals can occur by following effects:

1. Ferric oxide: Through magnetic ferric oxide soils the conductance of the located metal can comprehend falsified data.
2. Anomaly effects lead to the fact that large iron metals are indicated as precious metal.
3. Small parts of bronce partially may be indicated as iron, the accuracy of the measured values is therefore ensured starting from 5 x 5 cm in dimension.
4. The measured values can be falsified, because in the proximity of the located metal object other metal parts are existent.
5. Strongly magnetic interference fields within residential areas and in the vicinity of ground cables can influence the measured values especially during the utilization of the large search coil.
6. Disturbances often occur in the peripherals of radio stations.
7. Strongly magnetic fields, particularly in the neighbourhood of high voltage masts, can cause disfunctions.

4. General guidelines

4.1 Choice of search coils

In addition to your GOLD SCAN we deliver several search coils, each eligible for certain applications.

4.1.1 25 cm coil

The 25 cm search coil is particularly suitable for the search after small metal objects.

4.1.2 Cylindric coil

Especially in confined spaces the cylindric coil is applicable by its dimensions of 5 x 20 cm. The probe is supplied with a 10 m cable.

4.1.3 1 x 1 m PVC search frame

The provided 4 m cable coil is fastened alternatively in or to the 1 x 1 m PVC frame. The search frame is usually used for the deep sounding after medium sized and large metal objects. The frame is indispensably for the search for huge metal parts in larger areas. Furthermore small scrap iron parts will automatically be filtered.

4.2 Accumulator and charger

The strong pulse rating is supplied by a installed 2800 mAh Lithium-ion-accu, which can be loaded with the high-speed battery charger within 2 hours. The actual working time amounts to - depending upon coil size and usage of headphones - approx. 4-8 hours. The start of a loading procedure is indicated by the red LED, the green light shows the end of the loading procedure. After each loading procedure the lead for the battery charger should be removed.

In addition, we deliver an inverter module which enables the loading in the car.

4.3 Care

Your GOLD SCAN requires little maintenance, yet there are some items, which you should consider, in order to receive its optimal readiness for operation. Avoid extreme temperatures, since it can be possible that electronic construction units are damaged thereby. Protect the electronic housing with a plastic bag in case you should get caught by rain, fog or dust. Always keep your equipment clean and dry and wipe off sand and dirt.

Note
Metal detectors produce magnetic fields in the search coil and can cause disturbances in the closer environment of certain industrial plants or electronic devices.

4.4 Depth gauge GOLD SCAN

25 cm coil maximum search capacity 220 cm
1 x 1 m coil maximum search capacity of 500 cm

5. Technical data

5.1 Electronic unit

Dimensions ca.: 18 x 22 x 7 cm

Weight: 1450 g (incl. bag with shoulder strap)

Power supply: integrated Lithium-ionic accu 12 Volt / 2800 mAh
Operating time: ca. 4-8h
Loading time: maximal 3-4h
car-recharger: external car-recharger (connectable to cigarette lighter)

5.2 1 x 1 m coil

Dimensions: 8-fold demountable, incl. transport bag, approx. 60 cm length
Weight: total weight incl. transport bag approx. 1.2 kg

5.3 System requirements

You can connect your GOLD SCAN to any PC or Laptop with the following conditions:

The software works with Windows 98, 2000, NT, XP or Vista or WIN 7. As minimum requirements for a smooth operation the PC should be equipped with the following:

Processor with a pulse frequency of 1000 MHz or more
Hard drive with about 10 .. 20 MB free space
Graphic card with a minimum resolution of 800 x 600 points
Bluetooth ability to connect the external measuring hardware

A special computer is not necessary. You can use your own PC or Laptop for this device.

6. Computer and start of program

6.1 Software

6.1.1 Installing the software

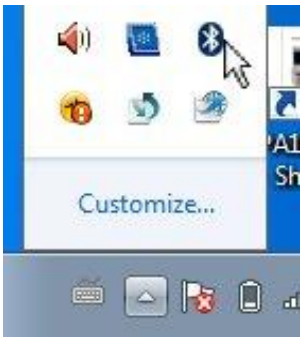
Please copy the software from the USB-stick on your Laptop or PC.

6.1.2 Program start-up

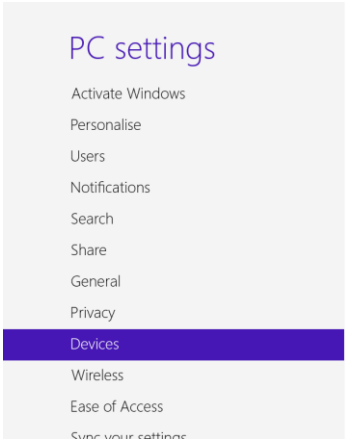
Open the software on KTS-Online.exe
Please note, that the minimum resolution is 800x600, otherwise important functions are not visible.

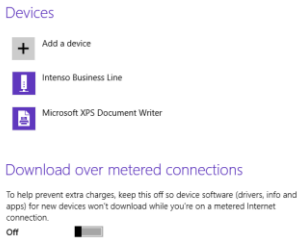
6.2 Bluetooth pairing

The Bluetooth symbol will appear in the menu bar. Via right-click on the above symbol the **add a device**–window will show all available Bluetooth devices (it is necessary that GOLD SCAN is active and the green LED flashes).

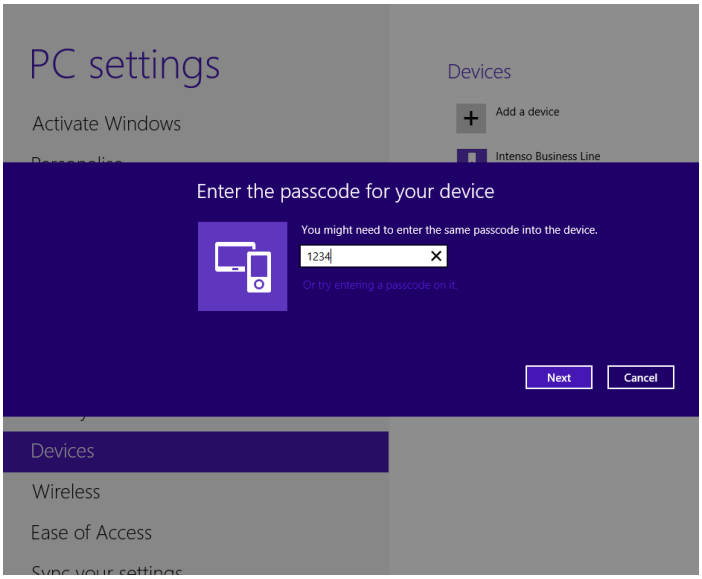


Select **Ezurio Blu 2I** and click “Next”. In the next window pick “Enter the device’s pairing code”, insert the password **“1234”** and go to “Next” (the device will automatically instal the suitable drivers). Finally click the Close-button to conclude the procedure





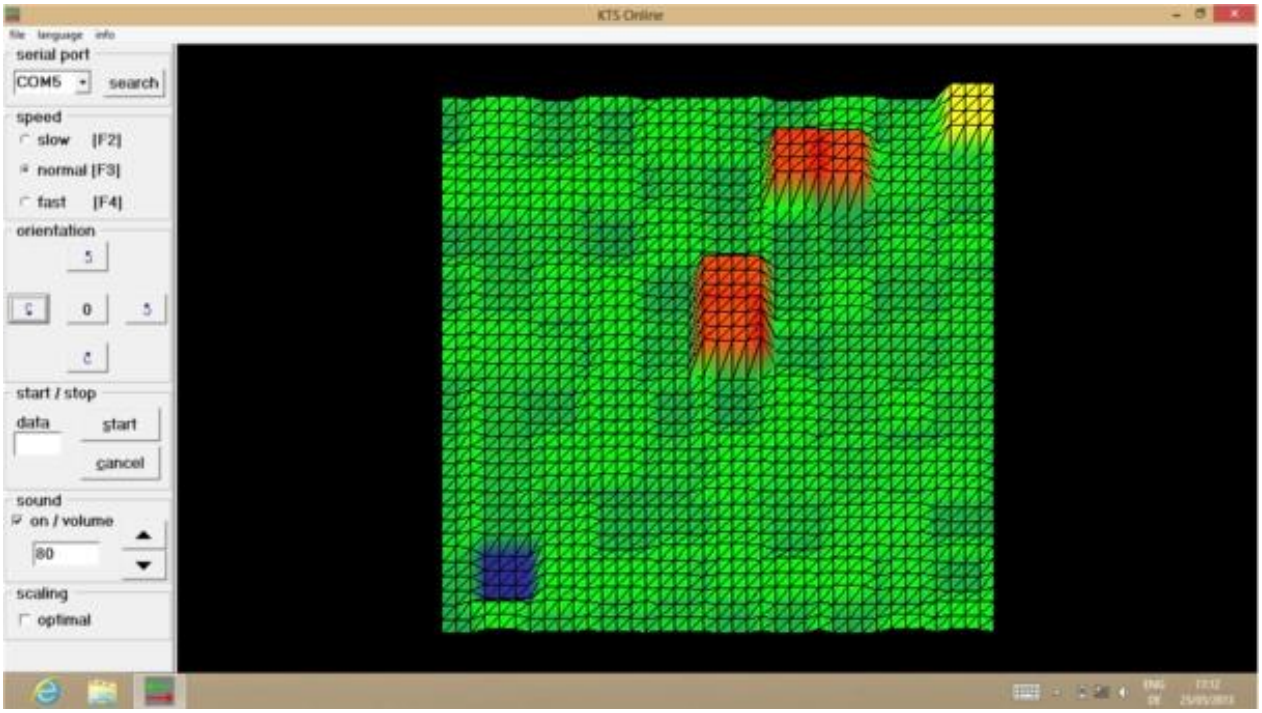
Click on the Bluetooth icon in Windows Taskbar, “Open Settings”, “COM Ports” – and keep the Outgoing COMPORT number in mind. After that open KTS 3D-Software, click on “Options” → “Serial Interface”, select the memorized COMPORT and click “OK”. Restart the software and the device will automatically be connected to the computer. The LED lights up permanently and GOLD SCAN is operational.



For additional application see that Bluetooth is active and GOLD SCAN is on (above proceedings must not be repeated).

6.3 Software information

During recording the software shows the measured data in 3D presentation.



7. Driver set-up (after reinstalling of Windows)

If you want to use another laptop to connect the main unit or had to reinstall Windows, copy the folder KTS-Electronic from the supplied USB-stick to your computer first (see also 6.2).

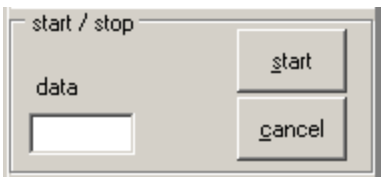
7.1 The search process

When analysing the soil you can start with different search modes.

IMPORTANT: Before searching and light up of the RESET-LED it is absolutely necessary to push the RESET button to guarantee an error-free measuring.

7.1.1 Start button

By pressing the Start button the search begins. The first results will be displayed 2-dimensional until the measurements are completed. For the next measuring you must press the start button again.



7.1.2 Storage of measurements

The measurement data can be stored for later analysis – take your time – you can do this at home.

7.1.3 Transferring the measured data

Transfer the data to the USB-stick if you wish to view the measurement data on another monitor. The complete software is pre-installed on the USB-stick, so that you can transfer the data to any other computer for editing.

7.2 System requirements

The program is a 32-bit application that operates under Windows 98, 2000, NT, XP, Vista or WIN 7. The minimum conditions for the proper operation should be equipped with the following requirements:

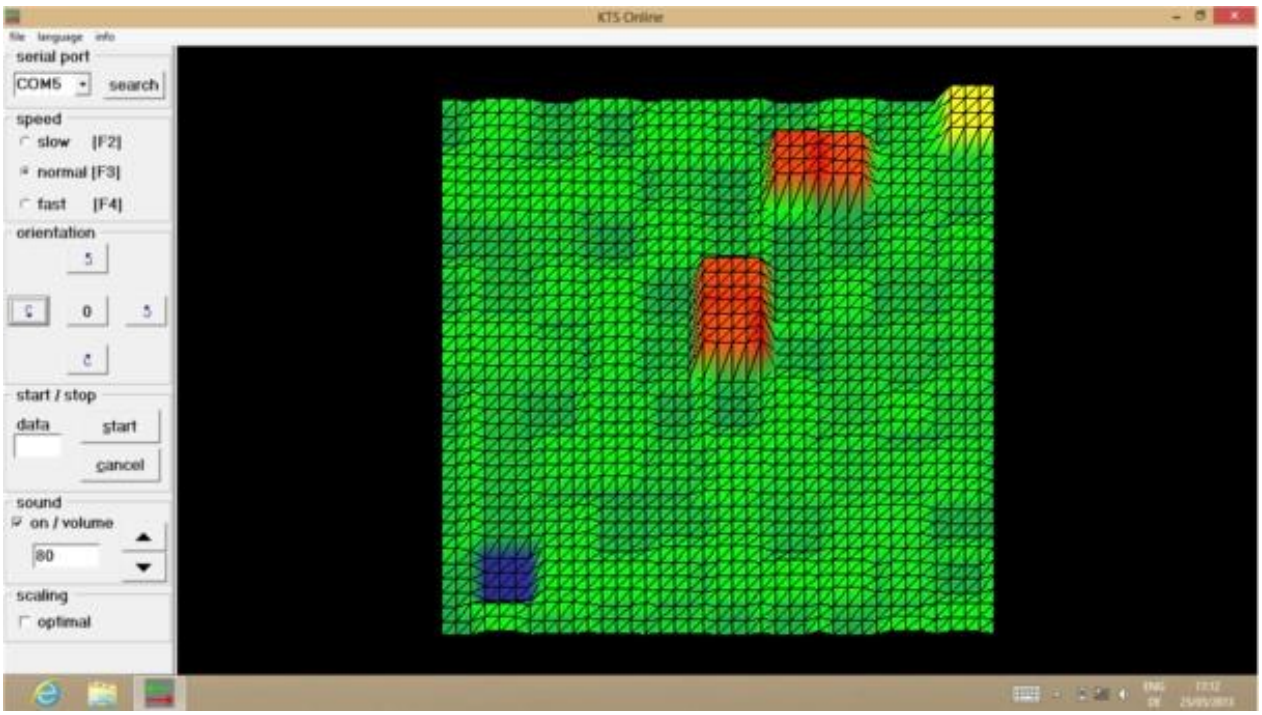
- Processor with pulse frequency from 1000 MHz or more
- Hard disc with approx. 10..20 MByte free storage space
- Graphic card with a minimum resolution of 800 x 600 points
- Bluetooth ability for the connection of the external measuring hardware

8. Program operations

The program serves to visualize the measurement data in colored, 3-dimensional representation, in particular the display of magnetic field data.

8.1 Main window

After start of program the main window appears with the menu bar, the adjustment range (left) and the display area (right).



This illustration shows a demo record.

8.2 Toolbar

8.2.1 File menu

In the menu bar the file menu will be found with entries for storage and reading of measurement files. In addition, the program can be closed here.

8.2.2 Language

The program allows the switch to several languages.

8.2.3 Info

A display delivers information of the present software version.

8.3 Adjustment range

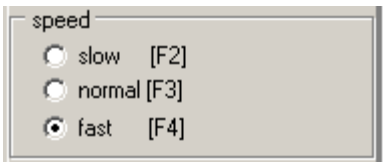
All settings will be stored and are available on the next program start.

8.3.1 Serial interface

Here you can choose the COM-port for the connection to the measurement hardware. In this list only the present COM-port will be shown. The number of the COM-ports can be read out in the Windows Device Manager.

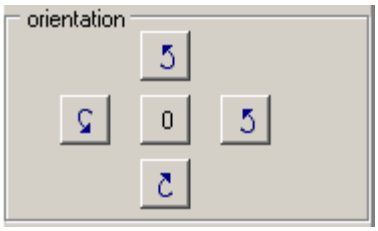
8.3.2 Speed

The measuring speed is devided into three velocities. The movement on the tracks must comply with your speed. A switch is also possible with the function keys [F2], [F3] and [F4].



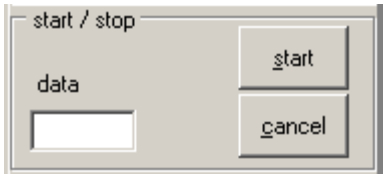
8.3.3 Position

The 3D display can be rotated and tilted. The center button [0] resets to the origin presentation.



8.3.4 Start / Stop

By pressing [Start] the search begins. With the button [Stop] you can interrupt the measurement at any time.



At the beginning of the measuring process a countdown is carried out. In the display area numbers from 3 to 0 will be shown. The figures are accompanied by short audio signals. After the START display the actual measurement starts. The probe must be moved from left to right. At the end of the track the audio signal is repeated. The probe must now be moved a little forward, the next track requires a movement from right to left. The recording stops automatically after the last track.

8.3.5 Audio output

The sound can be turned on or off. The volume is adjustable in 10% steps from 0 to 100%. Of course, the volume control depends on the individual volume of your PC.

8.3.6 Scaling

Via scaling the presentation is optimal adapted in the color spectrum. The minimum is shown in blue color, the maximum appears in red. The usage of the scaling is recommended particularly for low distinct measuring dynamics.

8.4 Presentation

The measurement data is color-coded and 3-dimensional. Low measurements comply with the color blue, green or yellow are assigned to medium measured values. High measurements are shown in red.

In the data menu you have the option to store measured data resp. display the measurements again. With a right click the 3-D presentation can be rotated in all directions. The [0] button leads you back to the origin presentation.

9. License agreement

The program KTS-Online as well as the entire accompanied electronic or printed documentation is subject to the copyright of the company KTS-Electronic. If parts of the present license regulations should show alterations or expansions in comparison to license regulations for former program versions, the current license regulations are valid with the beginning of the effective date.

The present license regulations come into effect on May 1st, 2007.

Through the utilization of the software, the user agrees to the present license regulations. For each incidence of violation of the terms of license the right of utilization automatically becomes void.

9.1 Utilisation clauses

After full payment of the invoice amount the customer is allowed to a not-exclusive right of usage of the program listed in the bill. This right is restricted to the owner of the original software. Consequently, the software can be used only on one single computer system at the same time.

All present and future copyrights and/or industrial protection rights of the provided programs and of all programs derivative from it, program modules or in this context produced records remain at KTS-Electronic.

9.2 Disclaimer of liability

The present program was tested carefully, nevertheless mistakes are not to be excluded. No guarantee is adopted for the usability of the program to a certain purpose. Especially, no liability is adopted for consequential damages as well as profit and asset losses, that could result from the application of the program as well as the affiliated documentation.

Price variations as well as alterations of each type regarding the software and the documentation must remain reservations and must not need separate notification.

10. Warranty

24 months from date of purchase we grant repair works free of charge due to factory errors originated by mistakes and defects.

According to the following conditions (see below) we remedy deficiencies free of charge, if they are evidently based on manufacturing errors or defects and are reported to us immediately after assessment of damage within **24 months** after delivery to the ultimate buyer.

Defective parts will be repaired gratuitous or will be replaced by efficient parts of our choice. KTS reserves the right to exchange a device by an equal valued replacement unit in case the returned product cannot be required in an appropriate budget time frame.

On-site repairs cannot be demanded. Replaced, resp. exchanged parts will merge into our property.

The guarantee claim expires in cases of improper handling, gross carelessness or when repairs, modifications, additionally installed parts or extentions are carried out from persons which are not authorized on our part to do so.

Guarantee claims will neither effect an extention of the term nor they will implement a new time limit.

Further requirements, in particular such through extraneous causes resulting damages are excluded, unless a commitment is not necessarily the case.

We therefore are not liable for any accidential, indirect or other subsequent damages of any kind, which lead to limited use, data loss, profit setbacks or operating failures.

10.1 Out of warranty service

KTS can agree upon a service after the term of guarantee is expired. In this case repairing and shipment will be charged.

10.2 Legal note

Before you start searching please note that the monument protection as well as other legal standards are relevant. KTS-ELECTRONIC assumes no responsibility for possible legal violations.

In case of doubts we recommend a comprehensive consultation with an attorney or national monument offices.

11. Contact

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